

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Berry**

Serial No. **10/045,111**

Filed: **January 10, 2002**

For: **Method and Apparatus for  
Automatic Pruning of Search Engine  
Indices**

§  
§  
§  
§  
§  
§  
§

Group Art Unit: **2161**

Examiner: **Nguyen, Cam Linh T.**

**Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450**

**35525**  
PATENT TRADEMARK OFFICE  
CUSTOMER NUMBER

**SUPPLEMENTAL REPLY BRIEF (37 C.F.R. 41.41)**

This Supplemental Reply Brief is submitted in response to the Supplemental Examiner's Answer mailed on February 28, 2007. This Supplemental Reply Brief is substantially identical to the Reply Brief filed October 4, 2006, replying to the Examiner's Answer mailed August 4, 2006, but has been revised to formally respond to the Supplemental Examiner's Answer mailed on February 28, 2007.

No fees are believed to be required to file a Reply Brief. If any fees are required, I authorize the Commissioner to charge these fees which may be required to IBM Corporation Deposit Account No. 09-0447.

**REAL PARTY IN INTEREST**

The real party in interest in this appeal is the following party: International Business Machines Corporation of Armonk, New York.

### **RELATED APPEALS AND INTERFERENCES**

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal, there are no such appeals or interferences.

## **STATUS OF CLAIMS**

### **A. TOTAL NUMBER OF CLAIMS IN APPLICATION**

Claims in the application are: 1-12, 16-21, 23-35, 39-44 and 46

### **B. STATUS OF ALL THE CLAIMS IN APPLICATION**

1. Claims canceled: 13-15, 22, 36-38 and 45
2. Claims withdrawn from consideration but not canceled: None
3. Claims pending: 1-12, 16-21, 23-35, 39-44 and 46
4. Claims allowed: None
5. Claims rejected: 1-12, 16-21, 23-35, 39-44 and 46
6. Claims objected to: None

### **C. CLAIMS ON APPEAL**

The claims on appeal are: 1-12, 16-21, 23-35, 39-44 and 46

### **STATUS OF AMENDMENTS**

An Amendment after Final Rejection was not filed. Accordingly, the claims on appeal herein are as amended in the Response to Office Action dated November 30, 2005, and finally rejected in the Final Office Action dated January 3, 2006.

## **SUMMARY OF CLAIMED SUBJECT MATTER**

### **A. CLAIM 1 - INDEPENDENT**

The subject matter of claim 1 is directed to a method in a data processing system for pruning search engine indices. A notification is received by a search engine from a client browser that a Web page retrieval error occurred for a Web page or that the Web page no longer contains selected keywords (524, Figure 5, 600, Figure 6, page 17, lines 4-7, page 17, line 28-page 18, line 10). The Web page is automatically deleted from the search engine indices in response to receiving the notification (Step 906, Figure 9, page 21, lines 15-18, also see page 17, lines 7-10).

### **B. CLAIM 8 - INDEPENDENT**

The subject matter of claim 8 is directed to a method in a data processing system for managing entries in a Web page database. A notification is received by a search engine from a client browser that a retrieval error occurred for a Web page (524, Figure 5, 600, Figure 6, page 17, lines 4-7, page 17, line 28-page 18, line 10). An entry associated with the Web page is automatically deleted from the Web page database in response to receiving the notification (Step 906, Figure 9, page 21, lines 15-18, see also page 17, lines 7-10).

### **C. CLAIM 16 – INDEPENDENT**

The subject matter of claim 16 is directed to a method in a data processing system for managing a set of bookmarks for a browser. A request for a Web page is sent in response to a selection of a bookmark from the set of bookmarks, wherein the bookmark is associated with the Web page (Steps 1000 and 1002, Figure 10, page 22, lines 23-25). A determination is made whether an error has occurred in retrieving the Web page (Step 1004, Figure 10, page 22, lines 25-27) and the bookmark is removed in response to determining that an error has occurred in retrieving the Web page (Step 1014, Figure 10, page 23, lines 4-7).

#### **D. CLAIM 20 – INDEPENDENT**

The subject matter of claim 20 is directed to a data processing system for pruning search engine indices. The data processing system (200, **Figure 2**, page 9, lines 21-25) comprises a bus system (including busses 206, 212 and 216, **Figure 2**, page 9, line 25- page 10, line 11) , a communications unit connected to the bus system (modem 218 and network adapter 220, **Figure 2**, page 10, lines 9-11), a memory (209, **Figure 2**, page 9, lines 29-31) connected to the bus system that includes a set of instructions, and a processing unit (202, 204, **Figure 2**, page 9, lines 27-28) connected to the bus system that executes the set of instructions to receive a notification from a client browser that a Web page retrieval error occurred for a Web page or that the Web page no longer contains selected keywords (page 16, lines 6-16). The processing unit automatically deletes the Web page from the search engine indices in response to receiving the notification (page 17, lines 4-10).

#### **E. CLAIM 21 – INDEPENDENT**

The subject matter of claim 21 is directed to a data processing system for managing entries in a Web page database. The data processing system (200, **Figure 2**, page 9, lines 21-25) comprises a bus system (including busses 206, 212 and 216, **Figure 2**, page 9, line 25- page 10, line 11), a communications unit connected to the bus system (modem 218 and network adapter 220, **Figure 2**, page 10, lines 9-11), a memory (209, **Figure 2**, page 9, lines 29-31) connected to the bus system that includes a set of instructions, and a processing unit (202, 204, **Figure 2**, page 9, lines 27-28) connected to the bus system that executes the set of instructions to receive a notification by a search engine (506, **Figure 5**, page 15, line 13) from a client browser (506, **Figure 5**, page 15, lines 8-9) that a retrieval error occurred for a Web page (page 16, lines 6-16). The processing unit automatically deletes an entry associated with the Web page from the Web page database in response to receiving the notification (page 17, lines 4-10).

#### **F. CLAIM 23 – INDEPENDENT**

The subject matter of claim 22 is directed to a data processing system for managing a set of bookmarks for a browser. The data processing system (200, **Figure 2**, page 9, lines 21-25) comprises a bus system (including busses 206, 212 and 216, **Figure 2**, page 9, line 25- page 10, line 11), a communications unit (modem 218 and network adapter 220, **Figure 2**, page 10, lines 9-11) connected to the bus system, a memory (209, **Figure 2**, page 9, lines 29-31) connected to the bus system that includes a set of instructions, and a processing unit (202, 204, **Figure 2**, page 9, lines 27-28) connected to the bus system that executes the set of instructions to send a request for a Web page in response to a selection of a bookmark from the set of bookmarks in which the bookmark is associated with the Web page, and removes the bookmark in response to determining that an error has occurred in retrieving the Web page (page 22, line 23-page 23, line 7).

#### **G. CLAIM 24 – INDEPENDENT**

The subject matter of claim 24 is directed to a data processing system for pruning search engine indices. The data processing system (200, **Figure 2**, page 9, lines 21-25) comprises first means (202, 204, **Figure 2**, page 9, lines 27-28) for receiving a notification from a client browser (502, **Figure 5**, page 15, line 8-9) that a Web page retrieval error occurred for a Web page or that the Web page no longer contains selected keywords, and deleting means for automatically deleting the Web page from the search engine indices in response to receiving the notification (202, 204, **Figure 2**, page 9, lines 27-28).

#### **H. CLAIM 31 – INDEPENDENT**

The subject matter of claim 31 is directed to a data processing system for managing entries in a Web page database. The data processing system (200, **Figure 2**, page 9, lines 21-25) comprises receiving means (202, 204, **Figure 2**, page 9, lines 27-28) for receiving a notification from a client browser that a retrieval error occurred for a Web page, and deleting means (202,



204, **Figure 2**, page 9, lines 27-28) for automatically deleting an entry associated with the Web page from the Web page database in response to receiving the notification.

**I. CLAIM 39 – INDEPENDENT**

The subject matter of claim 39 is directed to a data processing system for managing a set of bookmarks for a browser. The data processing system (**300, Figure 3**, page 11, lines 11-14) comprises sending means (browser **400, Figure 4**, page 22, lines 18-25) for sending a request for a Web page in response to a selection of a bookmark from the set of bookmarks, wherein the bookmark is associated with the Web page, determining means (browser **400, Figure 4**, page 22, lines 25-30) for determining whether an error has occurred in retrieving the Web page, and removing means (browser **400, Figure 4**, page 22, line 31 –page 23, line 9) for removing the bookmark in response to determining that an error has occurred in retrieving the Web page.

**J. CLAIM 43 – INDEPENDENT**

The subject matter of claim 43 is directed to a computer program product in a computer readable medium for pruning search engine indices. The computer program product comprises first instructions for receiving by a search engine a notification from a client browser that a Web page retrieval error occurred for a Web page or that the Web page no longer contains selected keywords (**524, Figure 5, 600, Figure 6**, page 17, lines 4-7, page 17, line 28-page 18, line 10), and second instructions for automatically deleting the Web page from the search engine indices in response to receiving the notification (**Step 906, Figure 9**, page 21, lines 15-18, also see page 17, lines 7-10).

**K. CLAIM 44 – INDEPENDENT**

The subject matter of claim 44 is directed to a computer program product in a computer readable medium for managing entries in a Web page database. The computer program product comprises

first instructions for receiving by a search engine a notification from a client browser that a retrieval error occurred for a Web page (524, **Figure 5**, 600, **Figure 6**, page 17, lines 4-7, page 17, line 28-page 18, line 10), and second instructions for automatically deleting an entry associated with the Web page from the Web page database in response to receiving the notification (Step 906, **Figure 9**, page 21, lines 15-18).

**L. CLAIM 46 – INDEPENDENT**

The subject matter of claim 46 is directed to a computer program product in a computer readable medium for managing a set of bookmarks for a browser. The computer program product comprises first instructions for sending a request for a Web page in response to a selection of a bookmark from the set of bookmarks, wherein the bookmark is associated with the Web page (Steps 1000 and 1002, **Figure 10**, page 22, lines 23-25), second instructions for determining whether an error has occurred in retrieving the Web page (Step 1004, **Figure 10**, page 22, lines 25-27), and third instructions for removing the bookmark in response to determining that an error has occurred in retrieving the Web page (Step 1014, **Figure 10**, page 23, lines 4-7).

**M. CLAIM 11 - DEPENDENT**

The subject matter of claim 11, which depends from claim 8, recites that the notification of claim 8 is a first type of notification. The method further recites that a second type of notification be received from a client browser that at least one selected search term is absent from the Web page (Step 812, **Figure 8**, page 20, lines 1-15), and that an entry associated with the Web page be automatically deleted from the Web page database in response to receiving the second type of notification (See page 17, lines 4-24).

**N. CLAIM 26 – DEPENDENT**

The subject matter of claim 26, which depends from claim 24, requires that the receiving means of claim 24 be a first receiving means, and that the system further include a second

receiving means (506, Figure 5, page 17, lines 4-24), for receiving a search request from the client browser (502, Figure 5, page 17, lines 4-24), wherein the search request contains the selected keywords, and a searching means (506, Figure 5, page 17, lines 4-24) for searching the search engine indices for matches to the selected keywords to form a search. A sending means (508, Figure 5, page 17, lines 4-24) sends a result of the search to the client browser (502, Figure 5, page 17, lines 4-24).

#### **O. CLAIM 34 - DEPENDENT**

The subject matter of claim 34, which depends from claim 31, requires that the notification of claim 31 be a first type of notification, and that the receiving means be a first receiving means. The system further includes a second receiving means (506, Figure 5, page 17, lines 4-24) for receiving a second type of notification from a client browser (502, Figure 5, page 17, lines 4-24) that at least one selected search term is absent from the Web page and a deleting means (506, Figure 5, page 17, lines 4-24) for automatically deleting an entry associated with the Web page from the Web page database in response to receiving the second type of notification.

**GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

**A. GROUND OF REJECTION 1 (Claims 1-12, 16-21, 23-35, 39-44 and 46)**

The Examiner has rejected claims 1-46 under 35 U.S.C. § 103(a) as being unpatentable over Glass et al. (U.S. Patent No. 6,253,204 B1) in view of Steele et al. (U.S. Patent Publication 2003/0191737 A1). Claims 13-15, 22, 36-38 and 45, however, were canceled in the Response to Office Action dated November 30, 2005, and are no longer in the case. Accordingly, it is assumed that the Examiner intended that the rejection apply only to claims 1-12, 16-21, 23-35, 39-44 and 46.

**B. NEW GROUND OF REJECTION CONTAINED IN EXAMINER'S ANSWER  
(Claims 43, 44 and 46)**

In the Supplemental Examiner's Answer dated February 28, 2007, the Examiner issued a new ground of rejection rejecting claims 43-46 under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Claim 45, however, was canceled in the Response to Office Action dated November 30, 2005, and is no longer in the case. Accordingly, it is assumed that the Examiner intended that the rejection apply only to claims 43, 44 and 46.

## ARGUMENT

### **A. GROUND OF REJECTION 1 (Claims 1-12, 16-21, 23-35, 39-44 and 46)**

The Examiner's Supplemental Examiner's Answer dated February 28, 2007, maintains the rejection of claims 1-46 under 35 U.S.C. § 103(a) as being unpatentable over Glass et al. (U.S. Patent No. 6,253,204 B1) in view of Steele et al. (U.S. Patent Publication 2003/0191737 A1). As pointed out in the Appeal Brief filed June 5, 2006, however, claims 13-15, 22, 36-38 and 45 were canceled in the Response to Office Action dated November 30, 2005, and are no longer in the case.

In responding to Appellant's arguments in the Appeal Brief that the Examiner has not established a *prima facie* case of obviousness in rejecting the claims as being unpatentable over Glass in view of Steele, the Examiner states, on page 8 of the Examiner's Answer: "In the instant case, the prior art compels the conclusion that the claimed invention is unpatentable under 35 U.S.C. § 103(a) as set for the in the Final Office Action, mailed January 23, 2006." Appellant respectfully disagrees. Appellant continues to submit that neither Glass nor Steele, considered alone or in combination, discloses or suggests "automatically deleting the Web page from the search engine indices" in response to "receiving a notification by a search engine from a client browser that a Web page retrieval error occurred for a Web page or that the Web page no longer contains selected keywords" as required by claim 1.

In continuing to reject the claims, the Examiner refers to paragraphs 0082, 0094 and 0113 of Steele as disclosing a system that has "a capability of deleting the URL in their index if an error (stale links) occurs in the central server or the sub server" (see page 11 of Supplemental Examiner's Answer). These paragraphs are reproduced below for the convenience of the Board:

[0082] As part of the update operation, the SBA 208 may review hypertext links in the pages on the local server 206. The reviewed links are then compared with a link list formed during the previous update operation to determine whether links have been added or subtracted. The SBA 208 includes the list of changed links in the index\_delta file transferred to the CI 214. This information may then be used by the CI 214 to remove references to stale links using one or more of a number of methods described more fully hereinbelow.

[0094] The CI maintains in the index database an index for each URL that lists the URLs of pages that include a link to it or reference it. This is a library of URLs that relates each subject URL to other URLs that have a page linking to the subject URL.

When index information is reported to the CI indicating that a particular URL has been deleted or moved, the CI may search the URL index to determine which URLs contain links to the deleted URL, and then send notification to the SBA at each of the referring servers. The local SBA may then take some action in response to such notification. For example, the SBA may notify the authors of the referring page, or the website administrator, that the link has been deleted or moved. The SBA may also be programmed to take automatic action. One example of automatic action that the SBA may take in view of a deleted or moved link is to add a warning to the html code of the referring page to indicate that the marked link is no longer valid. Another example is that the SBA may replace the link with a link to the root directory of the site to which the URL had hitherto been referring, if possible. Where the CI is notified that the URL has been moved, rather than deleted, the SBA at the referring site may be configured to update the link to the new URL.

[0113] Upon determining that the target document has been deleted or otherwise removed, the SBA may take one or more of the following actions. First, the SBA may transmit a message to the server administrator, at step 606, notifying the administrator of the change of the target document. The administrator may also be informed as to which source document or documents on the server contain a link to the target document in question. If authorized or configured to do so, the SBA may automatically amend the source document, for example, by inserting a mark in the source document to indicate that the link is invalid, in step 608. Additionally, the SBA may be authorized or configured to remove the link from the source document, at step 610. Furthermore, the SBA may be authorized or configured to replace the link to the current subject document with a new link to an alternative target document, at step 612.

The above paragraphs generally describe actions that the SBA (server-based agent) may take to identify or remove references to stale links in a source document (i.e., links to a URL that have been deleted or moved or are otherwise stale). As described, such actions may include amending a source document that contains a link to a target document by inserting a mark in the source document to indicate that the link is invalid, to remove the link from the source document or to replace the link with a link to another target document.

Nowhere in the above paragraphs, or anywhere else does Steele disclose or suggest “automatically deleting the Web page from the search engine indices” in response to “receiving a notification by a search engine from a client browser that a Web page retrieval error occurred for a Web page or that the Web page no longer contains selected keywords” as is required by claim 1. Steele describes mechanisms for marking, removing or changing stale links but not for automatically deleting a Web page from search engine indices in response to receiving a

notification by a search engine from a client browser that a Web page retrieval error occurred or that the Web page no longer contains selected keywords. Appellant respectfully submits that one of ordinary skill in the art having the Glass and Steele references before him would not be led by the teachings in the references to combine the references as proposed by the Examiner, and would not find the present invention obvious in view of the references. Appellant submits that claims 1-12, 16-21, 23-35, 39-44 and 46 patentably distinguish over the references in their present form, and respectfully requests that the Board reverse the Examiner's Final Rejection of the claims.

**B. New Ground of Rejection Contained in Supplemental Examiner's Answer (Claims 43, 44 and 46)**

In the Supplemental Examiner's Answer dated February 28, 2007, the Examiner issued a new ground of rejection rejecting claims 43-46 under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Claim 45, however, was canceled in the Response to Office Action dated November 30, 2005, and is no longer in the case.

Appellant respectfully traverses the new ground of rejection and submits that claims 43, 44 and 46 recite subject matter that is statutory and that fully satisfies the requirements of 35 U.S.C. § 101.

In rejecting the claims, the Examiner states:

Claims 43-46 are not statutory, directed to a computer program product in a computer readable medium. Appellant defined the terms "computer readable medium" can be included light wave transmissions, wireless communication (See detail description in page 24). Therefore, claims 43-46 do not result in a physical transformation, or physically implemented in a hardware computer nor do they appear to provide a useful, concrete and tangible result. Claims 43-46 directed to software, per se, lacking a storage medium that enables any underlying functionality to occur. Therefore, claims 43-46 appear non-statutory.

Supplemental Examiner's Answer dated February 28, 2007, pages 2-3.

Appellant respectfully submits that no basis is present for holding a computer usable medium non-statutory because the medium may include “wireless communications links using transmission forms, such as, for example, radio frequency and light wave transmissions” as set forth on page 24 of the specification. The MPEP states:

In this context, “functional descriptive material” consists of **data structures** and computer programs **which impart functionality when employed as a computer component**. (The definition of “data structure” is “a physical or logical relationship among data elements, designed to support specific data manipulation functions.” The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) “Nonfunctional descriptive material” includes but is not limited to music, literary works and a compilation or mere arrangement of data.

**When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized.** Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). **(emphasis added)**

MPEP 2106 (IV)(B)(1).

Claims 43, 44 and 46 recite clearly functional descriptive material since they impart functionality when employed as a computer component. Moreover, the functional descriptive material of claims 43, 44 and 46 is recorded on “some” computer-readable medium.

In the above context, the term “some” means “any” computer-readable medium. The MPEP does not draw any distinctions between one type of media that is considered to be statutory and another type of media that is considered to be non-statutory. To the contrary, the MPEP clearly states that as long as the functional descriptive material is in “some” computer-readable medium, it should be considered statutory. The only exceptions to this statement in the MPEP are functional descriptive material that does not generate a useful, concrete and tangible result, e.g., functional descriptive material composed completely of pure mathematical concepts



that provide no practical result. Claims 43, 44 and 46 clearly recite useful, concrete and tangible results in that the claims recite instructions for automatically deleting a Web page from search engine indices in response to receiving by the search engine a notification from a client browser that a Web page retrieval error occurred for a Web page or that the Web page no longer contains selected keywords (Claim 43), for automatically deleting an entry associated with a Web page from a Web page database in response to receiving a notification from a client browser that a retrieval error occurred for a Web page (Claim 44), and for removing a bookmark in response to determining that an error has occurred in retrieving a Web page (Claim 46). These are not just some disembodied mathematical concept or abstract idea.

Thus, claims 43, 44 and 46 are directed to functional descriptive material that provides a useful, concrete and tangible result, and which is embodied on "some" computer-readable medium. Therefore, claims 43, 44 and 46 are statutory, and it is respectfully requested that the Board reverse the rejection of the claims under 35 U.S.C. § 101.

Date: April 11, 2007

Respectfully Submitted,

/Gerald H. Glanzman/  
Gerald H. Glanzman  
Reg. No. 25,035  
**YEE & ASSOCIATES, P.C.**  
PO Box 802333  
Dallas, TX 75380  
(972) 385-8777

## **CLAIMS APPENDIX**

The text of the claims involved in the appeal are:

1. A method in a data processing system for pruning search engine indices, the method comprising:

receiving a notification by a search engine from a client browser that a Web page retrieval error occurred for a Web page or that the Web page no longer contains selected keywords; and  
automatically deleting the Web page from the search engine indices in response to receiving the notification.

2. The method of claim 1, wherein the step of automatically deleting is initiated if the notification results in a minimum number of notifications being received for the Web page.

3. The method of claim 1 further comprising:

receiving a search request from the client browser, wherein the search request contains the selected keywords;

searching the search engine indices for matches to the selected keywords to form a search; and

sending a result of the search to the client browser.

4. The method of claim 3, wherein the result includes an indication that the data processing system includes a search engine to cause the client browser to send the notification to the data processing system.

5. The method of claim 4, wherein the search request includes other keywords in addition to the selected keywords.

6. The method of claim 1, wherein the retrieval error indicates that the Web page is absent.

7. The method of claim 1, wherein the method is located in one of a search engine or a Web portal.

8. A method in a data processing system for managing entries in a Web page database, the method comprising:

receiving a notification by a search engine from a client browser that a retrieval error occurred for a Web page; and

automatically deleting an entry associated with the Web page from the Web page database in response to receiving the notification.

9. The method of claim 8, wherein the step of automatically deleting the entry occurs only if the notification causes a number of notifications received for the entry to exceed a threshold value.

10. The method of claim 8 further comprising:

receiving a search request from the client browser;

searching the Web page database for matches to the request to generate a result; and

sending the result generated from searching the Web page database to the client browser, wherein the result includes an indicator that the data processing system includes a search engine to cause the client browser to return the notification.

11. The method of claim 8, wherein the notification is a first type of notification and further comprising:

receiving a second type of notification from a client browser that at least one selected search term is absent from the Web page; and

automatically deleting an entry associated with the Web page from the Web page database in response to receiving the second type of notification.

12. The method of claim 8, wherein the method is located in one of a search engine or a Web portal.

16. A method in a data processing system for managing a set of bookmarks for a browser, the method comprising:

sending a request for a Web page in response to a selection of a bookmark from the set of bookmarks, wherein the bookmark is associated with the Web page;

determining whether an error has occurred in retrieving the Web page; and

removing the bookmark in response to determining that an error has occurred in retrieving the Web page.

17. The method of claim 16, wherein determining whether an error has occurred comprises:  
determining whether the error has occurred more than a selected number of times; and  
wherein removing the bookmark comprises:  
removing the bookmark from the set of bookmarks in response to determining that the error has occurred more than the selected number of times.
18. The method of claim 16, wherein removing the bookmark comprises:  
automatically removing the bookmark in response to determining that an error has occurred in retrieving the Web page.
19. The method of claim 16, wherein removing the bookmark comprises:  
removing the bookmark in response to a user input to remove the bookmark.
20. A data processing system for pruning search engine indices, the data processing system comprising:  
a bus system;  
a communications unit connected to the bus system;  
a memory connected to the bus system, wherein the memory includes a set of instructions; and  
a processing unit connected to the bus system, wherein the processing unit executes the set of instructions to receive a notification by a search engine from a client browser that a Web page retrieval error occurred for a Web page or that the Web page no longer contains selected

keywords; and automatically delete the Web page from the search engine indices in response to receiving the notification.

21. A data processing system for managing entries in a Web page database, the data processing system comprising:

- a bus system;

- a communications unit connected to the bus system;

- a memory connected to the bus system, wherein the memory includes as a set of instructions; and

- a processing unit connected to the bus system, wherein the processing unit executes the set of instructions to receive a notification by a search engine from a client browser that a retrieval error occurred for a Web page; and automatically delete an entry associated with the Web page from the Web page database in response to receiving the notification.

23. A data processing system for managing a set of bookmarks for a browser, the data processing system comprising:

- a bus system;

- a communications unit connected to the bus system;

- a memory connected to the bus system, wherein the memory includes a set of instructions; and

- a processing unit connected to the bus system, wherein the processing unit executes the set of instructions to send a request for a Web page in response to a selection of a bookmark from

the set of bookmarks in which the bookmark is associated with the Web page and removes the bookmark in response to determining that an error has occurred in retrieving the Web page.

24. A data processing system for pruning search engine indices, the data processing system comprising:

first means for receiving a notification from a client browser that a Web page retrieval error occurred for a Web page or that the Web page no longer contains selected keywords; and

deleting means for automatically deleting the Web page from the search engine indices in response to receiving the notification.

25. The data processing system of claim 24, wherein the means of automatically deleting is initiated if the notification results in a minimum number of notifications being received for the Web page.

26. The data processing system of claim 24 wherein the receiving means is a first receiving means further comprising:

second receiving means for receiving a search request from the client browser, wherein the search request contains the selected keywords;

searching means for searching the search engine indices for matches to the selected keywords to form a search; and

sending means for sending a result of the search to the client browser.

27. The data processing system of claim 26, wherein the result includes an indication that the data processing system includes a search engine to cause the client browser to send the notification to the data processing system.

28. The data processing system of claim 27, wherein the search request includes other keywords in addition to the selected keywords.

29. The data processing system of claim 24, wherein the retrieval error indicates that the Web page is absent.

30. The data processing system of claim 24, wherein the data processing system is located in one of a search engine or a Web portal.

31. A data processing system for managing entries in a Web page database, the data processing system comprising:

receiving means for receiving a notification from a client browser that a retrieval error occurred for a Web page; and

deleting means for automatically deleting an entry associated with the Web page from the Web page database in response to receiving the notification.

32. The data processing system of claim 31, wherein the deleting means is initiated only if the notification causes a number of notifications received for the entry to exceed a threshold value.



33. The data processing system of claim 31 further comprising:  
receiving means for receiving a search request from the client browser;  
searching means for searching the Web page database for matches to the request to generate a result; and  
sending means for sending the result generated from searching the Web page database to the client browser, wherein the result includes an indicator that the data processing system includes a search engine to cause the client browser to return the notification.
34. The data processing system of claim 31, wherein the notification is a first type of notification and the receiving means is a first receiving means and further comprising:  
second receiving means for receiving a second type of notification from a client browser that at least one selected search term is absent from the Web page; and  
deleting means for automatically deleting an entry associated with the Web page from the Web page database in response to receiving the second type of notification.
35. The data processing system of claim 31, wherein the receiving means and the deleting means are located in one of a search engine or a Web portal.
39. A data processing system for managing a set of bookmarks for a browser, the data processing system comprising:  
sending means for sending a request for a Web page in response to a selection of a bookmark from the set of bookmarks, wherein the bookmark is associated with the Web page;

determining means for determining whether an error has occurred in retrieving the Web page; and

removing means for removing the bookmark in response to determining that an error has occurred in retrieving the Web page.

40. The data processing system of claim 39, wherein the determining means comprises:

determining means for determining whether the error has occurred more than a selected number of times; and

wherein the removing means comprises:

removing means for removing the bookmark from the set of bookmarks in response to determining that the error has occurred more than the selected number of times.

41. The data processing system of claim 40, wherein the removing means comprises:

generating means for generating a user prompt to remove the bookmark in response to determining that the error has occurred more than the selected number of times.

42. The data processing system of claim 41, wherein the removing means comprises:

removing means for removing the bookmark in response to a user input to remove the bookmark.

43. A computer program product in a computer readable medium for pruning search engine indices, the computer program product comprising:

first instructions for receiving by a search engine a notification from a client browser that a Web page retrieval error occurred for a Web page or that the Web page no longer contains selected keywords; and

second instructions for automatically deleting the Web page from the search engine indices in response to receiving the notification.

44. A computer program product in a computer readable medium for managing entries in a Web page database, the computer program product comprising:

first instructions for receiving by a search engine a notification from a client browser that a retrieval error occurred for a Web page; and

second instructions for automatically deleting an entry associated with the Web page from the Web page database in response to receiving the notification.

46. A computer program product in a computer readable medium for managing a set of bookmarks for a browser, the computer program product comprising:

first instructions for sending a request for a Web page in response to a selection of a bookmark from the set of bookmarks, wherein the bookmark is associated with the Web page;

second instructions for determining whether an error has occurred in retrieving the Web page; and

third instructions for removing the bookmark in response to determining that an error has occurred in retrieving the Web page.

## **EVIDENCE APPENDIX**

There is no evidence to be presented.

## **RELATED PROCEEDINGS APPENDIX**

There are no related proceedings.